

Technology Transfer

AIR FORCE



TECHNOLOGY
TRANSFER

AFRL/XPTT



Overview

What

Why

Who

Process

Mechanisms

**Other
programs**

**How to contact
us**



Definitions

Technology Transfer

The process by which knowledge, facilities, or capabilities developed in one place or for one purpose are transferred and utilized in another place for another purpose to fulfill actual or potential public or domestic needs.

Air Force Laboratory

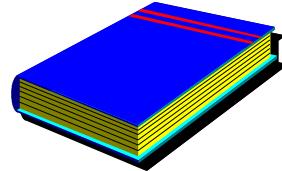
Any research, development, or engineering facility that is Air Force owned, leased, or otherwise used by the Air Force.

Share the Air Force's "Tech-Knowledge" with those outside the Air Force





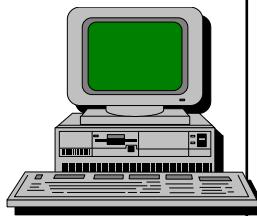
What is “Tech-Knowledge”?



Written
Information



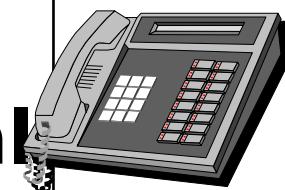
Expertise



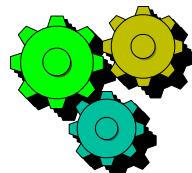
Equipment

Technology:

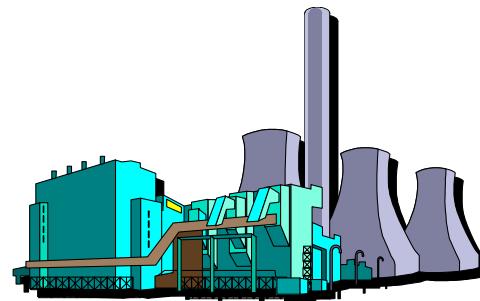
**Scientific or Technological
Developmental Resources**



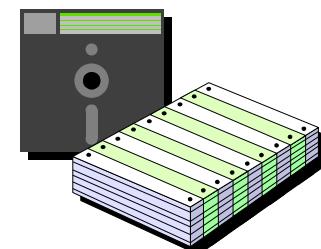
Oral
Information



Hardware



R&D Unique Facilities



Data



Why Transfer Technology?

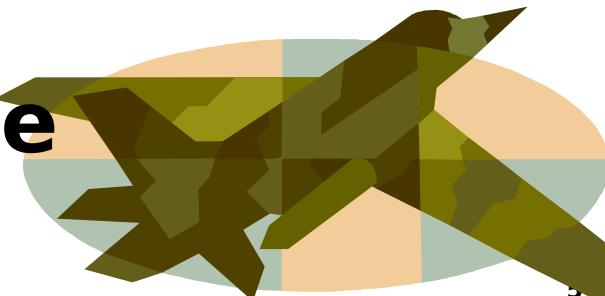


**Public law and DOD
says “do it”**



It helps the economy

It helps the Air Force





Public Laws



- **Stevenson-Wydler Act of 1980**
- **Bayh-Dole Act of 1980**
- **Small Business Act of 1982**
- **Federal T² Act of 1986**
- **Omnibus Trade and Competitiveness Act of 1988**
- **National Competitiveness Technology Transfer Act of 1989**
- **American Technology Preeminence Act of 1991**
- **National Technology Transfer & Advancement Act of 1995**
- **Technology Transfer Commercialization Act of 2000**





DoD Guidance

- **DoD Domestic Technology Transfer Program (DoDD 5535.3)**
 - DoD response to legislation
 - DoD responsibilities
 - Promotes domestic Tech Transfer activities, such as CRADAs
 - Stipulates use of awards and royalties





Air Force Guidance



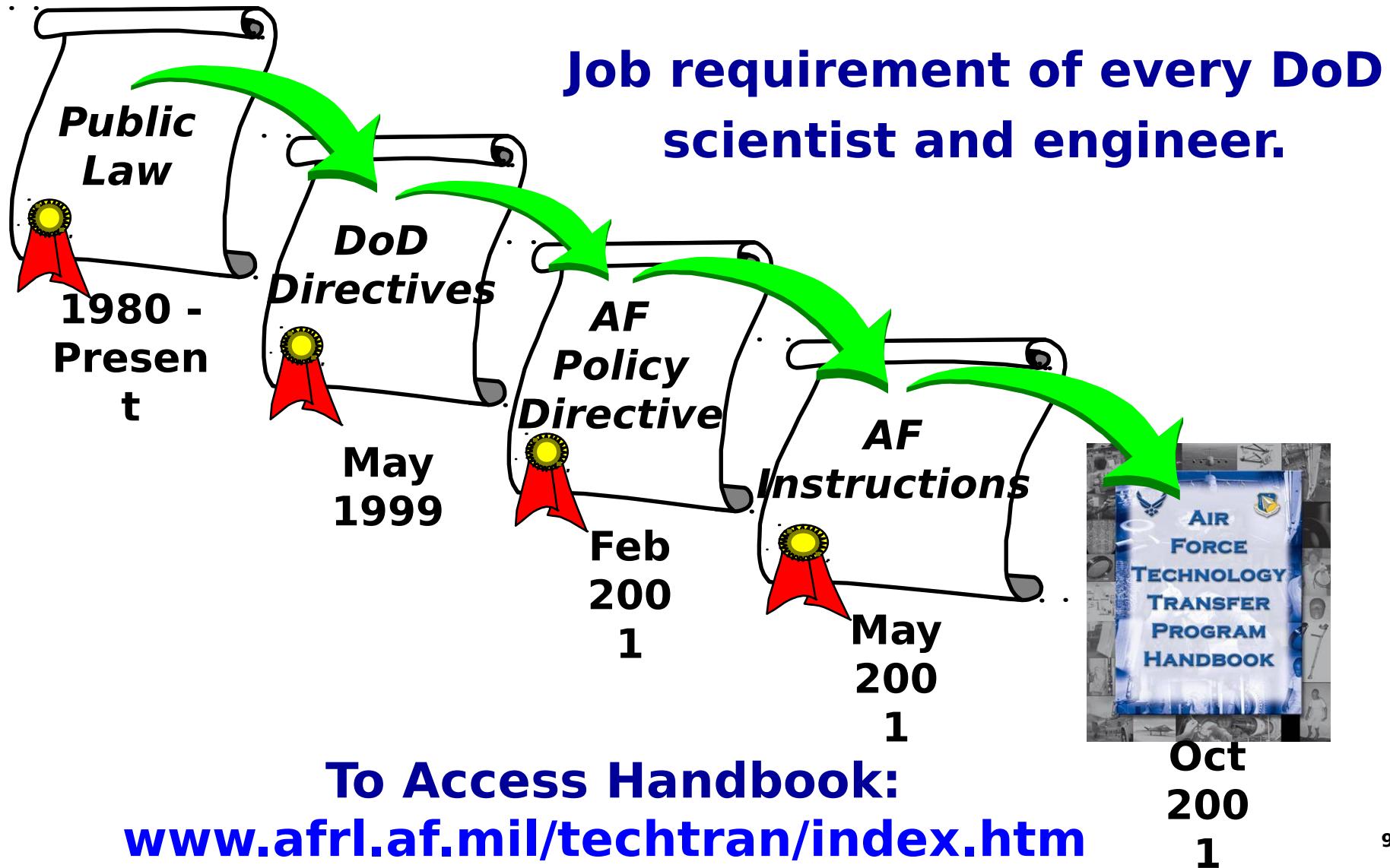
AFPD 61-3: Domestic Technology Transfer

AFI 61-301: ORTA responsibilities and royalty income

AFI 61-302: CRADA procedures and licensing inventions



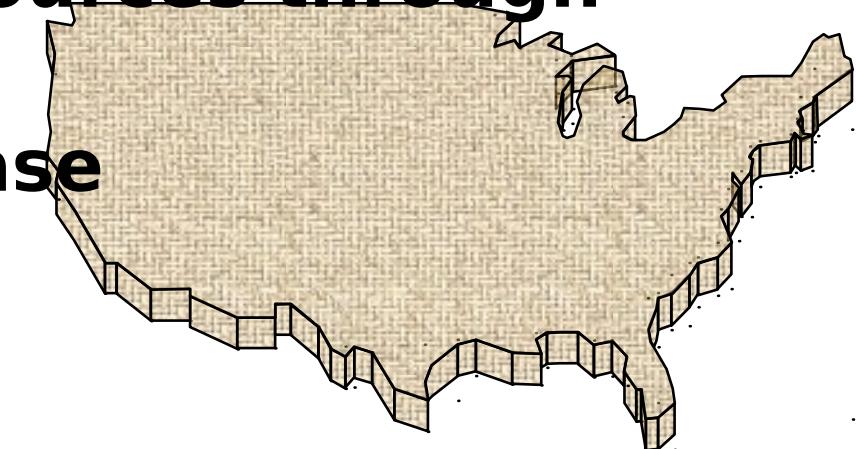
T² Guidance





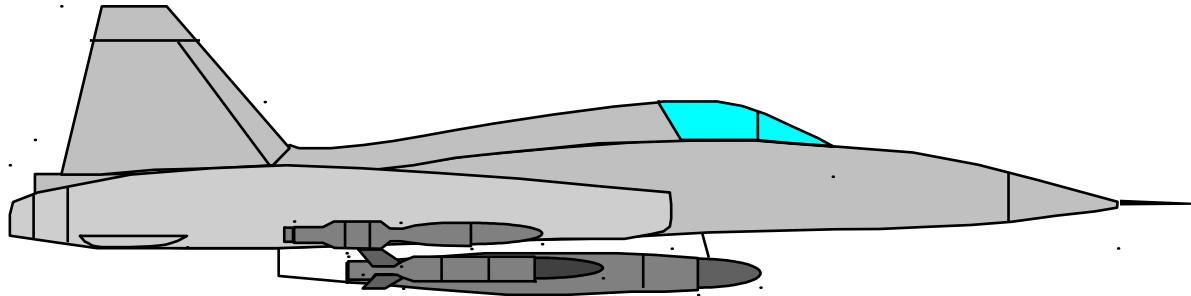
It Helps the Economy?

- **Economic growth**
- **Improved economic competitiveness**
- **Better quality of life**
- **Technology superiority**
- **Leveraging of resources through partnerships**
- **Build industrial base**





It Helps the Air Force?



- **Help in meeting mission requirements**
- **Leveraging of commercial resources**
- **Building industrial base, lowering costs**
- **Increase rate of return of federal R&D resources**
- **Improved knowledge base**



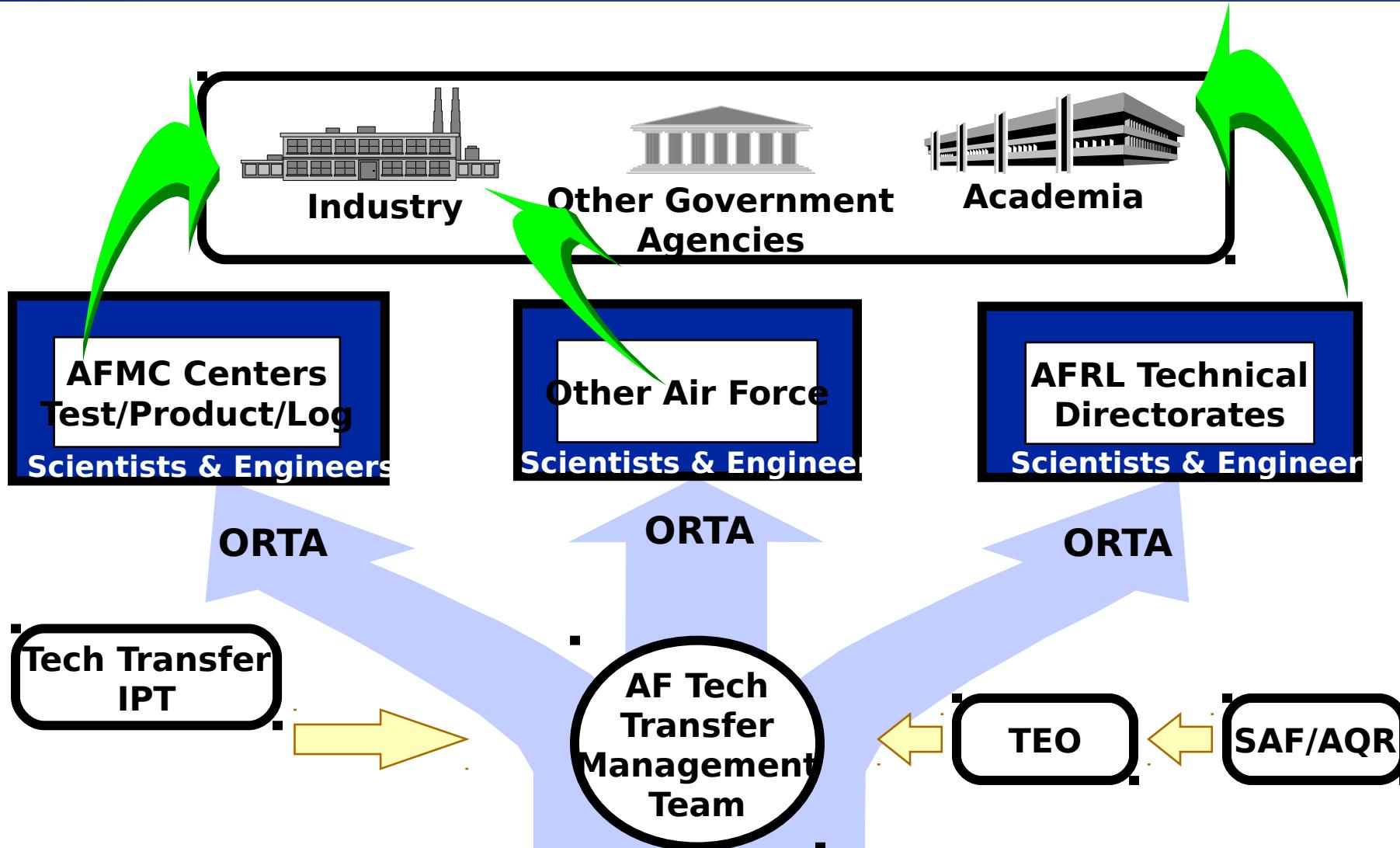
T² Goals

- 1. Integrate T² into the laboratory acquisition strategy**
- 2. Increase patent and licensing activities**
- 3. Market laboratory resources & technologies**
- 4. Promote technology transfer training**
- 5. Share AF technology with private and public sectors**
- 6. Integrate T² into the AF battlelabs and others**





The Transfer Organization





Responsibilities

- ▶ **SAF/AQR**
- ▶ **OPR for T² program**
- ▶ **Establishes policy & procedures**
- ▶ **Reviews T² program for overall effectiveness**
- ▶ **Interfaces with OSD, SAF (AQ and PEOs) and other government**
- ▶ **AF T2 Management Team AFRL/XPTT**
- ▶ **Implements the execution of the T² program**
- ▶ **Provides policy and guidance to the field**
- ▶ **Chairs the TTIPT**
- ▶ **Interfaces with DoD and other component managers**
- ▶ **Manages the DoD Partnership Intermediary TechLink**



ORTA - Focal Point for T²

Inside the Lab

R&D Staff

Lab Management

Public Affairs

Legal Staff

Procurement Staff

Human Resources

ORTA
Office of
Research
&
Technology

- Supports S&T
- Coordinates transfer activity
- Assists non-AF
- Acts as intermediary

Outside the Lab

Private Sector

Academia

State and Local Organizations

National Networks

Professional and Trade Groups

Other ORTAs



AF Scientists and Engineers



- **Provide ideas, develop technology**
- **Identify potential commercial applications**
- **Actively support technology transfer**
 - As required by law and AF policy
- **Work with a team of Tech Transfer professionals**
 - ORTA, AF T² Management Team, etc.





The Master Process

**THERE ARE SIX
MAJOR STEPS**

**POST
TRANSFER
ADMIN**

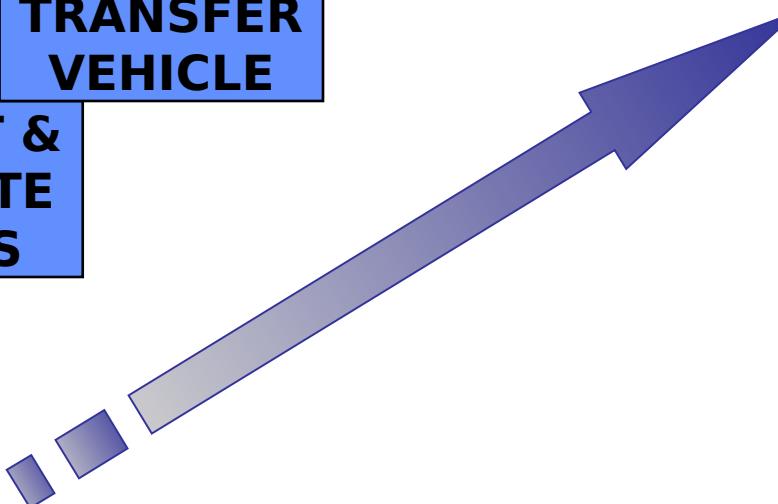
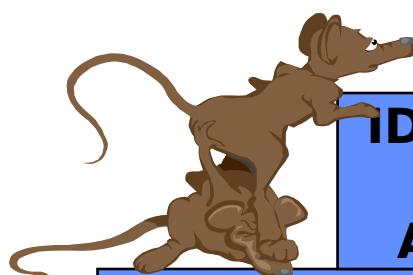
**EXECUTE
TRANSFER
VEHICLE**

**IDENTIFY
TRANSFER
VEHICLE**

**MARKET &
PROMOTE
ASSETS**

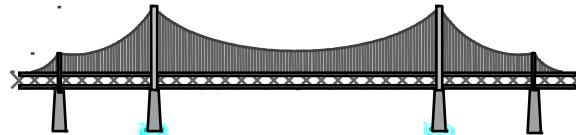
**IDENTIFY
TECH
ASSETS**

**DEVELOP
INVESTMENT
STRATEGY**





Linking Technology with the Mission and Marketplace



Laboratory Resources **Intermediaries**

- Technology
- Expertise
- Facilities
- Equipment
- Data

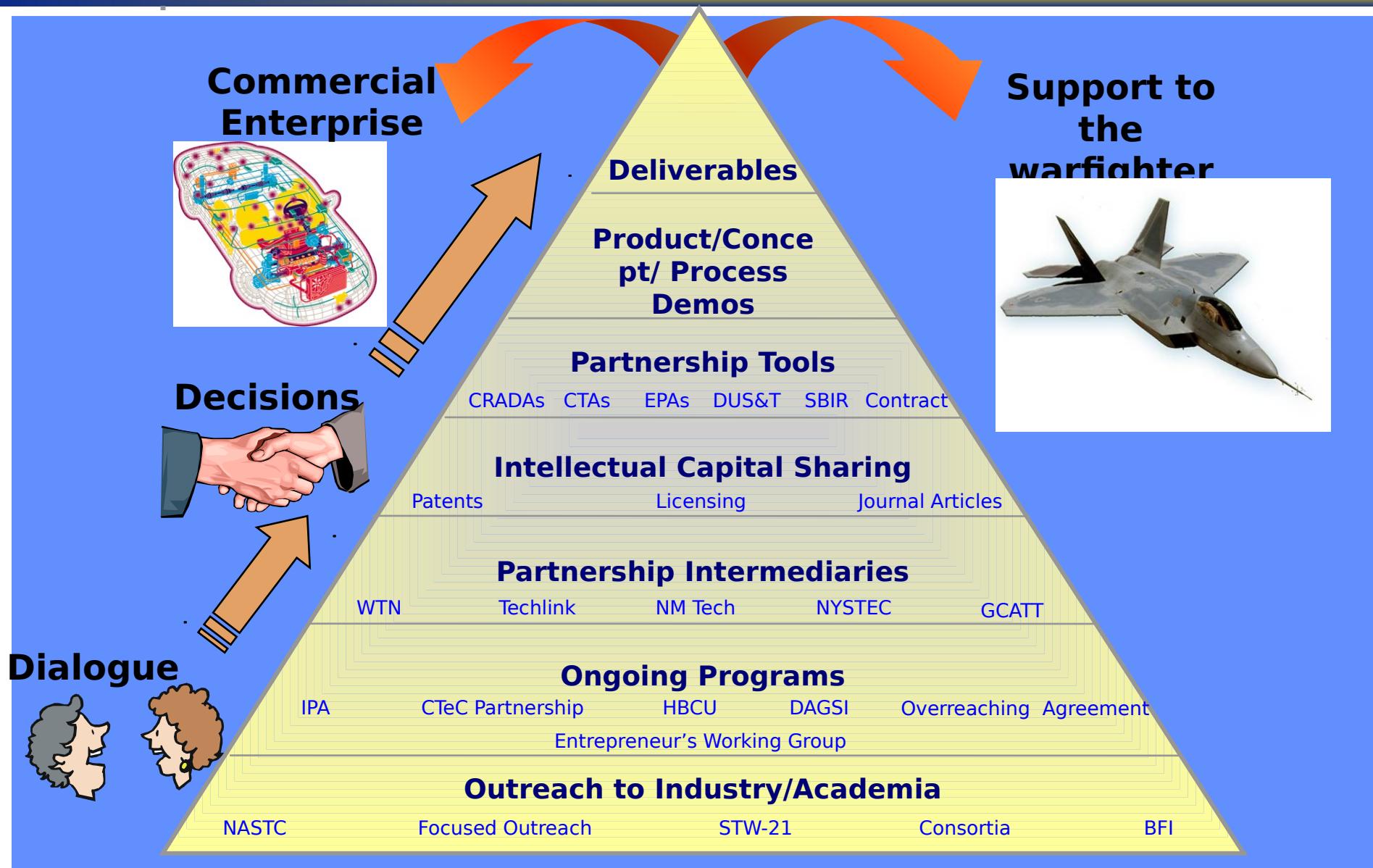
- GCATT
- New Mexico Tech
- NYSTEC
- TechLink
- Federal Laboratory Consortium (FLC)
- Regional T2 Centers

Industry

- Private Industry
- Public Sector
- Academia



Developing Partnerships





Agreement Mechanisms

**Cooperative
Research
and Development
Agreement**

**Patent License
Agreement**

MOU/MOA

**Commercial Test
Agreement**

**Cooperative
Agreement**

SBIR

DUS&T

IR&D

**Education
Partnership
Agreement**





Cooperative Research and Development Agreements (CRADAs)



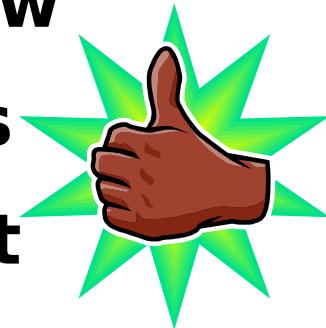
- Authorizes exchange of personnel, services, facilities, equipment or other resources toward the conduct of specified R&D effort consistent with lab mission
- Authorizes parties to determine rights in inventions, patents and other intellectual property
- Not a procurement contract/grant
- Trade secret and commercial and financial information protected from disclosure under the Freedom of Information Act
- Preference for small business and businesses located in the US
- Allows for Quid Pro Quo



+ Benefits of CRADAs +

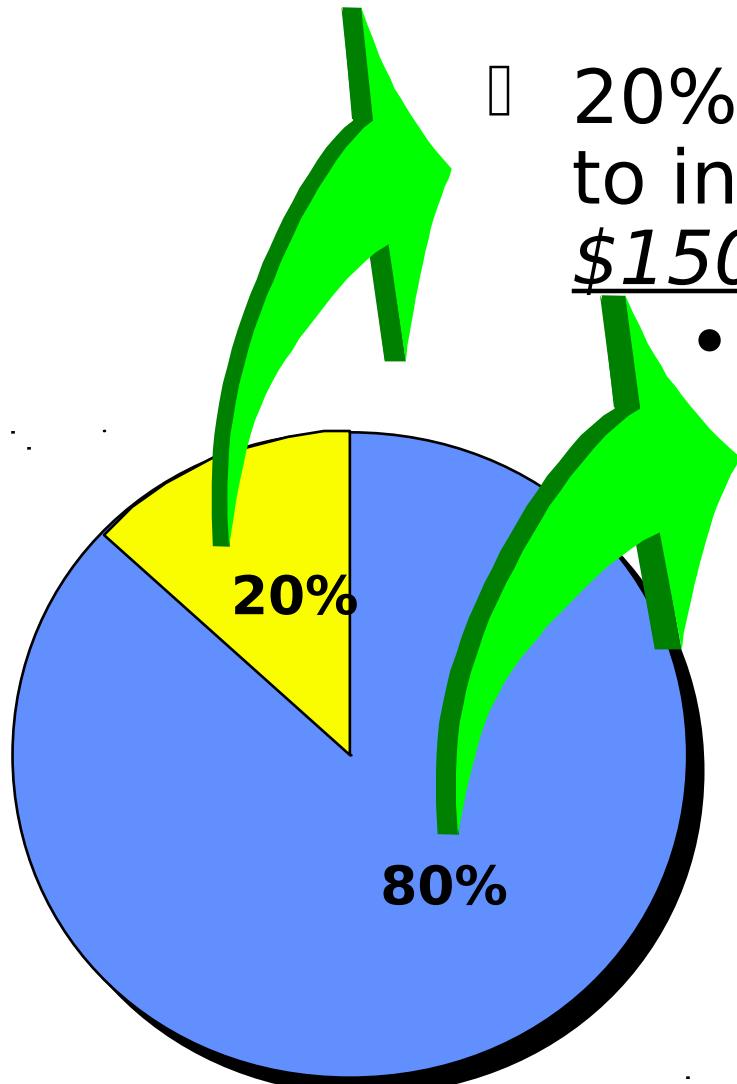


- **Flexible mechanism for transferring federally funded R&D**
- **Provides a team approach to new processes/products**
- **Opens channels of communication on respective needs**
- **Able to leverage resources: personnel, facilities, equipment and know-how**
- **Provides exclusive patent licenses**
- **Enhances mission accomplishment**





CRADAS with Patents



- 20% of royalty income to inventor, up to \$150K/year
 - **Balance to organization for:**
 - **Incidental administrative expenses**
 - **Rewarding technical employees**
 - **Promoting scientific exchange**
 - **Funding Tech Transfer education & training**



CRADAs without Patents

- **Money goes to the organization**
 - Reimburse costs & incidental expenses
 - Education & training funds
- **Can receive non-monetary like data**
- **Promote scientific exchange**





License Agreements

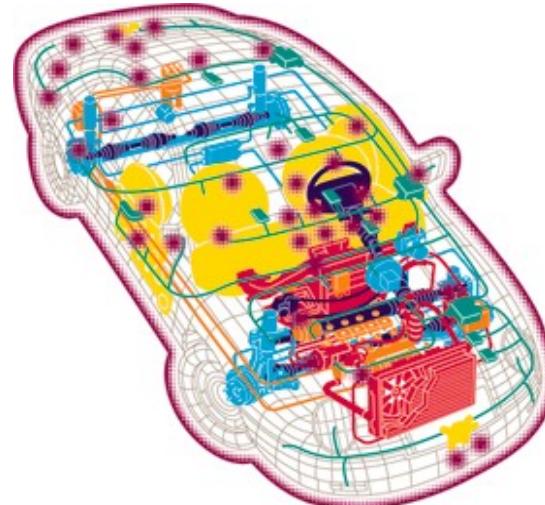
- Negotiated by tech transfer focal points assisted by patent counsel for **Government-owned inventions**
- **Government purpose license normally retained**
- **Government usually receives royalties**





T² Successes

Utilization of Test Facilities



Brake-by-Wire



All Composite Machinery



Forced Air Deicing



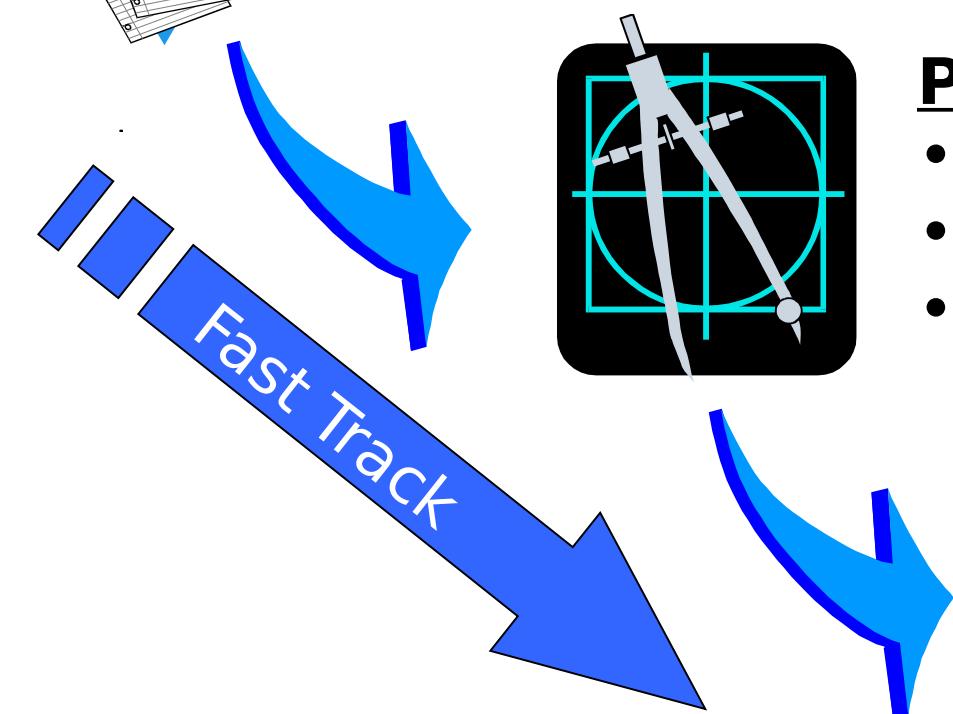
Small Business Innovation Research

\$250 + M per year



Phase I

- Concept Feasibility
- $\leq \$100K$
- 9 Months



Phase II Enhancement

$\forall \leq \$500K$ matching
 $\forall \leq 1$ Year

Phase II

- Concept Development
- $\leq \$750K$
- 2 Years



Phase III

- Product is ready for insertion



Air Force STTR Program

\$25 + M per year



Process overview

Phase I

- Concept Feasibility
- $\leq \$100K$
- 9 Months



Phase II **institutions**

- Concept Development
- $\leq \$750K$
- 2 Years



Air Force
focuses STTR
on basic (6.1)
research

**STTR requires
teaming
between Small
Business and
research
institutions**

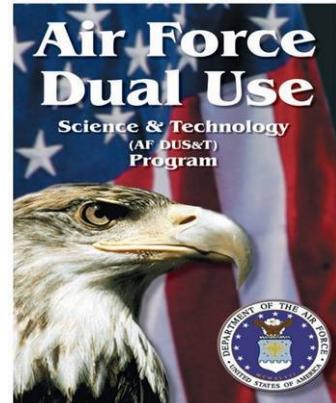
Phase III
• Technologies
ready for next
level of R&D



Dual Use Science & Technology (DUS&T)



- **What it is**
 - **Joint AF and industry technology development program that leverages AF investment**
- **Program Established by Congress in FY 1997**
 - **Directed that a senior DoD official oversee dual use investments to meet war-fighting needs; DDR&E was appointed to that position**
 - **Objective was to make DUS&T a normal way of doing business**
- **Current Status**
 - **Approximately \$1 Billion invested in more than 350 projects**
 - **AF DUS&T Program Forecasted to Continue to FY07**
 - **Legislative directive to pursue Dual Use S&T development and have senior DoD oversight remains**

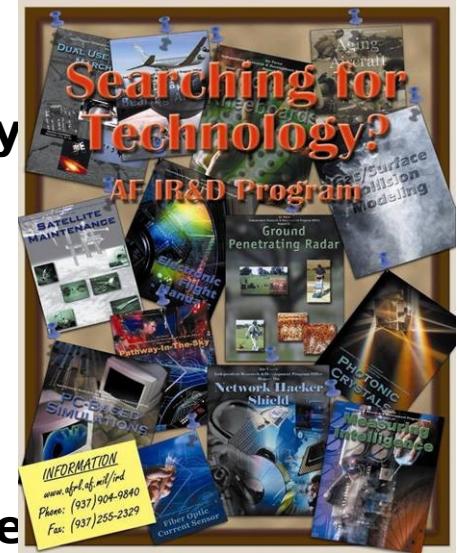




Independent Research & Development (IR&D)

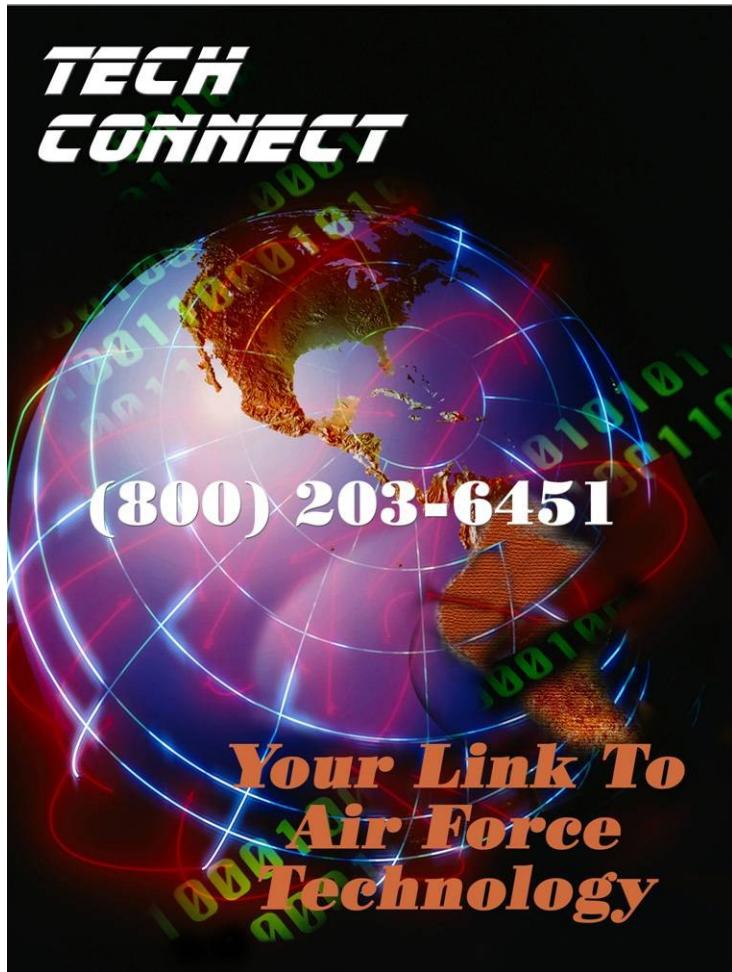


- **What it does**
 - Identifies technologies developed by industry
- **Customers & Stakeholders**
 - Gov't - all TDs, ACC, AMC, ALCs
 - Industry
- **Purpose**
 - Strengthen national defense industrial and technology base
 - Promote effective use of advanced technologies developed through industry IR&D efforts
 - Encourage industry to invest IR&D resources to advance the state-of-the-art in weapon system development
 - Improve AF/Industry communications, in the areas of AF R&D requirements and their potential technological solutions





T² Organizations



Tech Connect AFRL Technology Information Clearinghouse

- **Serves government, industry & academia**
 - Free service
 - Helps find AF & other government focal points in specific S&T areas
 - Identifies tech transfer opportunities
- **Place requests via phone, fax, e-mail or home page**
 - aftecccon@wpafb.af.mil

1-800-203-6451

www.wpafb.af.mil/techconn/index.htm



Other T² Organizations

- **Federal Laboratory Consortium (FLC)**
 - Over 700 member research labs and centers from 17 federal departments and agencies
 - Promotes rapid movement of technology from federal labs into mainstream of U.S. economy through various mechanisms and incentives
 - Contact Info: 1-865-667-7727 or www.federallabs.org
- **Regional Technology Transfer Centers (RTTCs)**
 - Established in 1991 to concentrate on technology needs of regional companies and industries
 - Operated by a university or nonprofit organization in cooperation with the FLC
 - Mirrors FLC regional organization
 - Contact Info: 1-800-472-6785



Other T² Organizations

- **Robert C. Byrd National Technology Transfer Center (NTTC)**
 - **Founded in 1989**
 - **Independent organization funded by NASA/Wheeling Jesuit University**
 - **Matches technology needs with federal lab resources by providing:**
 - **Technology evaluation and commercialization services**
 - **Professional development programs**
 - **Data services**
 - **Contact Info: 1-800-472-6785**



How to Reach Us

**Air Force Research Laboratory
Technology Transfer Office
Building 16, Room 107
2275 D Street
WPAFB, OH 45433-7226**

Air Force T² Program Manager: Doug Blair
(937) 986-9176 Email: Douglas.Blair@wpafb.af.mil

On the Web: www.afrl.af.mil

**“The Air Force Research
Laboratory
is Your Laboratory!”**



Summary

Keys to Technology Transfer Success

- Establish technology transfer strategy complementary to lab's investment strategy
- Identify technologies with commercial potential
- Promote resources to target audience
- Determine an optimal technology transfer strategy
- Accomplish transfer
- Implement effective post-transfer effort





Conclusion

- **T² is an Air Force acquisition strategy that supports the warfighter**
- **T² provides a return on our AF S&T investment and enhances economic development**

A I R F O R C E



T E C H N O L O G Y
T R A N S F E R



Back-Up Charts



Stevenson-Wydler Technology Innovation Act of 1980



- Made it easier for federal labs to transfer technology to non-Federal parties
- Focused on dissemination of information
- Required federal laboratories to take an active role in technical cooperation
- Established Offices of Research and Technology Applications (ORTAs)





Bayh-Dole Act of 1980

- Permitted universities, not-for-profits, and small businesses to obtain title to inventions developed with governmental support
- Provided intellectual property protection from public dissemination and Freedom of Information Act (FOIA)
- Allowed GOGO laboratories to grant exclusive licenses to patents





Small Business Innovation Development Act of 1982



- **Established the Small Business Innovation Research Program (SBIR)**
- **Required agencies to provide special funds for small business R&D connected to the agencies' mission**





Federal T² Act of 1986

- **Made T² a responsibility of all federal laboratory scientists and engineers**
- **Legislated a charter for the FLC**
- **Empowered each agency to give the directors of GOGO laboratories authority to enter into cooperative R&D agreements and negotiate licensing agreements**
- **Provided for exchanging laboratory personnel, services, and equipment with their research partners**
- **Required that government-employed inventors share in royalties from patent licenses**



Omnibus Trade and Competitiveness Act of 1988



- Placed emphasis on the need for public/private cooperation on assuring full use of results and resources
- Established centers for transferring manufacturing technology
- Established Industrial Extension Services within states & an information clearing house on successful state & local technology programs
- Extended royalties to non-government employees of federal labs
- Established NIST and broadened its T² role



National Competitiveness Technology Transfer Act of 1989



- Granted GOCO federal laboratories opportunities to enter into CRADAs
- Allowed information and innovations resulting from CRADAs to be protected from disclosure
- Provided a technology transfer mission for the nuclear weapons laboratories

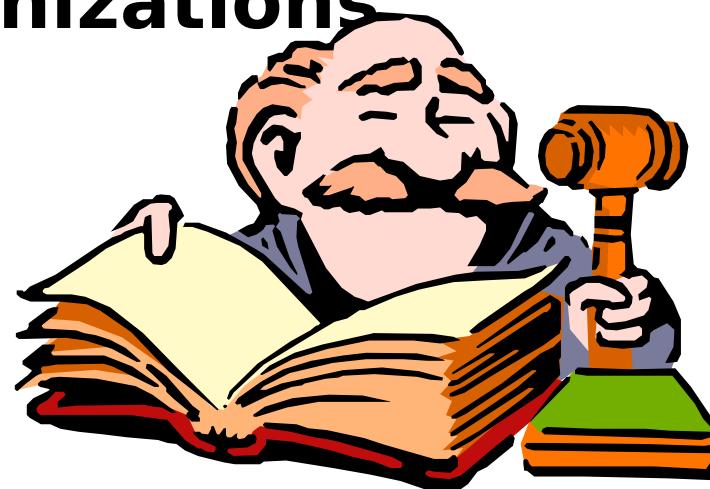




American Technology Preeminence Act of 1991



- Allowed CRADA participants to exchange intellectual property
- Allowed lab directors to give excess equipment to educational institutions or nonprofit organizations





Small Business Research and Development Enhancement Act



- In 1992 it established the Small Business Technology Transfer (STTR), at DoD, DoE, HHS, NASA, and NSF
- Required each of the five agencies to fund cooperative R&D projects involving a small company and a researcher at a university, federally-funded R&D center, or nonprofit research center



National Technology Transfer and Advancement Act of 1995



- Gave collaborating party in a CRADA the right to license an invention resulting from joint research
- CRADA partner may retain title to an invention made solely by its employees in exchange for granting the government a worldwide license to use the invention
- Increased annual limit of lab royalty payments per inventor from \$100K to \$150K
- Provided FLC with permanent funding from government agencies



Technology Transfer Commercialization Act of 2000



- **Requires licensee to make a commitment to achieve practical application of the invention within a reasonable time**
- **Requires an agency to provide a 15-day public notice before granting an exclusive or partially exclusive license (except licensing of an invention made under a CRADA)**
- **Permits federal laboratories to grant a license to a federally owned invention that was created prior to signing the CRADA**
- **Increased flexibility for partnership intermediaries**